Attorney Docket No.: P-7664-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	TRIBELSKY, Zamir	Examiner:	YOO, REGINA M.
Serial No.:	10/522,315	Group Art Unit:	1797
Filed:	September 22, 2005	Confirmation No.	9214
Title:	METHOD AND DEVICE FOR AFFECTING A CHEMICAL OR MECHANICAL PROPERTY OF A TARGET SITE		

PRE-APPEAL BRIEF

Mail Stop AF
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant respectfully requests a pre-appeal review conference of the Examiner's final rejection in the above-referenced applications. A Notice of Appeal and a Petition for a 3-Month Extension of Time, together with the required fees, are being filed herewith. Accordingly, this request for pre-appeal brief is proper and timely filed.

As set forth below, Applicants assert that the Examiner's argument that pending claims 1-4 and 16-18 are unpatentable over Baca (US 2002-0079271) in view of Neuberger (US 5,658,148) and Schneider (US 3,503,804), fails to make a *prima-facie* case of obviousness. Accordingly, the rejection of claims 1-4 and 16-18 under 35 U.S.C. §103(a) should be reversed.

I. The Baca Reference

Baca is directed to ultraviolet (UV) treatment of water in a dental hand piece prior to the water entering a patient's mouth. Water is streamed via a passageway or tubing within the hand piece and enters a water treatment area. UV radiation delivered over, and a fiber optic line is optically coupled (for example, via a window) to, the water treatment area.

As admitted by the Examiner, Baca does not teach that "the liquid serves as a flowing liquid wave guide for the UV-radiation along the longitudinal trajectory of the stream using total internal reflection, or that the liquid stream has a refractive index greater than a refractive index of the surrounding of the stream of liquid" (see Office Action, page 3).

In fact, the configurations disclosed by Baca do not enable total internal reflection of the UV radiation along the longitudinal trajectory of the stream of the flowing liquid. Further, as the UV treatment is for a relatively small amount of water that passes a relatively small distance, there is no need or motivation for modifying the Baca device to enable total internal reflection. It would make the device cumbersome and not suitable for its intended use as a dental hand piece.

II. The Neuberger Reference

Neuberger discloses an oral cleaning device for destroying bacteria and viruses in the month and not for disinfecting liquid by UV. Neuberger teaches using a diode laser at a wave length of 904 nm 670 nm, 780 nm or 820 nm, none of which are in the UV range.

The Examiner alleges that Neuberger discloses "using total internal reflection" particularly at Col. 3 lines 37-44 and Col. 4 lines 12-25. Applicants strongly disagree. The Neuberger reference mentions neither the term nor the concept of "total internal reflection", which is a well defined phenomenon. For example, Neuberger discloses:

> Plastic brush 50 is designed to be safe for home use by the fact that laser radiation coming to fiber end 53 will be reflected harmlessly upward into plastic brush 50 if no liquid is being forced through liquid passage 52. This is due to angle 54 which creates a reflective surface because air and optical fiber 51 have substantially different n. When liquid is passing over the surface of fiber end 53 laser radiation will pass through substantially parallel to the longitudinal axis of optical fiber 51, thereby being delivered to oral areas to be cleaned or treated via opening 55 via opening 55 with the liquid that came through passage 52. This occurs because the difference in n between optical fiber 53 and a liquid or water is low enough that fiber end 53 is now a refractive, rather than a reflective surface. (Col. 4 lines 12-25).

Clearly, the phenomenon of total internal reflection is not disclosed by the above recitation which merely describes a mirror effect of a reflective surface capable of a single reflection of light which does not propagate in a liquid medium.

III. The Schneider Reference

The Schneider reference does not disclose UV liquid disinfection. Schneider is directed to a surface cleaning apparatus that uses a jet of extra pure liquid as cleaning medium. The method includes producing sonic or ultrasonic waves on a surface with a jet of water to mechanically remove dirt particles from the surface by focusing onto the surface a beam of parallel or converging energy coaxially with the liquid jet of clear water. The method does not require the use of UV radiation. In contrast, the Schneider reference specifically indicates that the radiation suitable for this cleaning method can be any radiation in the range between infrared and UV.

The liquid jet disclosed by Schneider serves as a medium for energy transfer and accordingly this "presupposes that the liquid does not offer any appreciable resistance to the radiation energy at least in the region of the jet length (clear liquid) (see column 2, lines 35-38). Further, Schneider teaches that "The liquid jet is formed of clear liquid so as not to constitute any resistance to the radiation energy of the beam" (emphasis added, see column 3, lines 73-75 of Schneider.

IV. The Baca and Schneider References are in Entirely Different Fields

The Baca reference is in the field of water treatment using laser light in particular for dental hand pieces whereas the Schneider reference is directed to surface treatment using a clear liquid jet and ultrasonic energy. These are entirely different fields and a person of ordinary skill would not have combined the Baca reference with the Schneider reference to modify the dental hand piece of Baca enable total internal reflection. Further, the Schneider reference logically would have not commended itself to Baca's attention when Baca was developing his invention.

V. There Would Have Been no Motivation to Combine the Baca and Schneider References

Total internal reflection of UV radiation within a liquid occurs only under certain conditions and it is not an inherent characteristic of any form of radiation of liquid. Applicants respectfully assert that it would not be obvious to modify the teachings of the Baca reference, which does not teach or suggest the use of total internal reflection, not *per se* and not along the longitudinal trajectory of a stream, with the teachings of Schneider, and to create a new method for UV liquid disinfection that includes "disinfecting the steam of liquid by directing, within said stream of liquid, said UV-radiation such that said UV-radiation is being guided throughout said stream and the liquid to be disinfected serves as a flowing liquid wave guide for the UV-radiation along the longitudinal trajectory of the stream using total internal reflection" as recited by claim 1.

The Examiner purported to explain the motivation for combining Baca and Schneider references as being "maintaining the radiation within the fluid stream so as to avoid dangers of the radiation being applied to unintended object or material when the radiation is emitted beyond the location where the radiation is first introduced into the water". (Office Action, page 5). Baca is not concerned, however, by the danger of applying radiation to the patient month as the Baca dental piece is designed such that the radiation will not propagate beyond a predefined area. In fact, if the Baca dental piece would be modified to enable the radiation to propagate along with the flow of liquid using total internal reflection, the UV radiation would reach the patient's mouth and the apparatus will be inoperable for its intended purpose (See **MPEP § 2143.01**).

VI. Conclusion

The Examiner has failed to make a prima-facie case of obviousness at least for the reasons stated above. Accordingly, the pending claims are allowable over the combination of Baca, Neuberger and Schneider and the rejection of claims 1-4 and 16-18 under 35 U.S.C. §103(a) should be reversed.

Please charge any fees associated with this paper to deposit account No. 50-3355.

Respectfully submitted,

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